

Department of Commerce

Safety & Buildings Division

201 West Washington Avenue

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Madison, WI 53701-2658

Evaluation #	200220-W (Replaces 960022-W)
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Wisconsin Building Products Evaluation

Material

Metal Web Parallel Chord Trusses

Manufacturer

MiTek Industries, Inc.
14515 North Outer 40 Drive, Suite 300
Chesterfield, MO 63017-5746

SCOPE OF EVALUATION

GENERAL: This report evaluates the POSI-STRUT® Metal Web Parallel Chord Trusses manufactured by MiTek Industries, Inc.

This review includes the cited **Comm** code requirements below in accordance with the current **Wisconsin Uniform Dwelling Code (for 1 & 2 family dwellings)**:

Structural:

- **POSI-STRUT® Metal Web Parallel Chord Trusses** were evaluated for use as floor joists and roof joists in accordance with s. Comm 21.02(3)(a)2. and s. Comm 21.19.

This review includes the cited **Comm** code requirements below in accordance with the current **Wisconsin Building and Heating, Ventilating and Air conditioning Code**:

Structural:

- **POSI-STRUT® Metal Web Parallel Chord Trusses** were evaluated for use as floor joists and roof joists in accordance with s. Comm 53.60 and s. Comm 53.61(2).

This review includes the cited **International Building Code (IBC)** requirements below in accordance with the **Wisconsin Amended IBC Code (effective 7/01/02):**

Structural:

- **POSI-STRUT® Metal Web Parallel Chord Trusses** were evaluated for use as floor joists, roof joists, rim joists and structural rim joists in accordance with s. 2301.2, 2301.2.1, 2303.1, 2303.1.2, 2306.1, and 2306.1.1.

DESCRIPTION AND USE OF MATERIAL

GENERAL: POSI-STRUT® Metal Web Parallel Chord Trusses have a “V”-shaped web member stamped from 20 gage galvanized steel (ASTM A446- Grade A with ASTM A525 – G60 coating) with teeth formed at the upper ends of the two arms and at the lower intersection of the two arms. POSI-STRUT® Metal Web Parallel Chord Trusses are symmetrical about a vertical centerline through the lower intersection of the two arms. The teeth are of the Hydro-Air POSI-TOOTH (PT) configuration with two teeth, 1/8-inch wide and 5/16-inch long, punched from each slot.

POSI-STRUT® Metal Web Parallel Chord Trusses, 8, 10 and 12 have a modular length of 24 inches. Webs are stamped to depths of 7-1/8 inch, 9-1/8 inch and 11-1/4 inch designated as POSI-STRUT 8, 10 and 12, respectively. This provides trusses of comparable depth to 2 x 8 , 2 x 10 and 2 x 12 common framing. Each arm of the “V” is formed into a channel shape, 1 inch wide with 1/2-inch flanges.

POSI-STRUT® Metal Web Parallel Chord Trusses 8 and 10 have teeth punched at each end of each diagonal arm, and POSI-STRUT® Metal Web Parallel Chord Truss 12 has 40 such teeth.

POSI-STRUT® Metal Web Parallel Chord Truss 16 has a modular length of 30 inches and a depth of 15-3/4 inches. Each arm of the “V” forms a channel 1-1/8 inch wide with 5/8-inch flanges. It has 50 teeth at the outer end of each arm and a total of 80 teeth at the crotch of the “V”.

Trusses are fabricated by pressing the toothed areas of the web into the 1-1/2 inch face of Structural Light Framing or comparable MSR lumber to form a Warren configuration, parallel chord truss. Webs are installed in pairs from each end of the truss. As the webs are a modular inch length, adjustments for overall truss length is provided by single overlapping webs from each side at the centerline or by a rectangular duct opening of maximum width of 24 inches. See **Figure 3**.

Each “V” shaped web is coined vertically at the centerline to permit separation into two half webs by successively bending back and forth to cause fracture along the partially sheared section.

TESTS AND RESULTS

The tests and results listed below cover both the current WI Building Code **Comm** and future **IBC** requirements.

Structural: Structural load testing was conducted on the 8, 10, 12, and 16 inch trusses for various spans. The test results were verified by structural calculations.

The webs of 20 gauge steel stampings of galvanized cold rolled steel conform to ASTM A-446.

Table 1 – Allowable Vertical Shear In Pounds Per Pair Of POSI-STRUT Webs

POSI-STRUT	Web Force	Southern Pine	Douglas Fir	Hem-Fir and Spruce-Pine-Fir
8	Compression web	800	790	630
	Tension web	600	590	500
	Tension web with nail ³	880	870	700
10	Compression web	840	820	710
	Tension web	700	680	540
	Tension web with nail ³	980	950	800
12	Compression web	940	840	740
	Tension web	780	700	550
	Tension web with nail ³	980	900	820
16	Compression web	930	930	---
	Tension web	845	845	---
	Tension web with nail ³	980	955	---

¹ Allowable shear values shall not be increased for duration of loading.

² Allowable shear values are for total load (LL + DL), but in no case shall DL exceed 75 per cent of LL.

³ See Figure 4.

Identification: The webs are identified by a stamping of the trademark “POSI-STRUT” on one leg of each V-shaped strut. The trusses are identified by a stamp indicating the manufacturer’s name and the name of the quality control inspection agency. See **Figure 5**.

LIMITATIONS OF APPROVAL

The limitations below cover both the current WI Building Codes **Comm** and future **IBC** requirements.

Structural: Design and Installation: Top chord and bottom chord bearing details are shown in **Figure 1**. Top chord-bearing trusses must have the first compression web double reinforced. Bearing contact must be provided for the full width of the chord and the corresponding bearing length must be as determined by the allowable stress perpendicular to grain for the species and grade of lumber used. Web positioning and chord splice location tolerances are shown in **Figure 2**. Chord splice and end block connector plates are Type M20 as detailed in ICBO Evaluation Service, Inc. report ER-4922 and must be sized in accordance with the design values indicated in the report.

The top flange must be laterally supported and the ends of the joists must be restrained to prevent rollover. The fabrication tolerances and chord splice location are noted in **Figure 2**. Each chord may have one splice joint located within the middle 12 inches \pm 3 inches of the 24-inch panel length.

Chords must be designed as continuous members, with combined axial and bending stresses not to exceed those set forth in the applicable code sections of the current WI Building Codes **Comm** and future **IBC** requirements. The applicable increases shall be as permitted in the current **Wisconsin Uniform Dwelling Code (for 1 & 2 family dwellings, Chapter Comm 21; Wisconsin Building and Heating, Ventilating and Air conditioning Code, Chapter Comm 53** and the **International Building Code (IBC), Chapter 23**. Deflections are limited as set forth in the codes using beam formulas based on the full cross-sectional areas of the top and bottom chords and the assigned modulus of elasticity for the lumber used. Allowable vertical shear values for web members are noted in **Table 1**.

This approval will be valid through December 31, 2007, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date:

Approval Date: May 16, 2002 By: _____

Lee E. Finley, Jr.
Product & Material Review
Integrated Services Bureau